

Cambridge IGCSE · Physics (0625) · Mock Paper Set 1

Mock Paper Set 1

Paper 2 · Paper 4 · Paper 6, with worked solutions and mark schemes

Extended tier (Core and Supplement content), written for the Cambridge IGCSE Physics 0625 syllabus for examinations in 2026, 2027 and 2028.

What is inside this set

Paper	Format	Time	Marks
Paper 2 · Multiple Choice (Extended)	40 four-option questions, one mark each	45 minutes	40
Paper 4 · Theory (Extended)	11 compulsory structured questions; answer in the spaces provided	1 hour 15 minutes	80
Paper 6 · Alternative to Practical	4 compulsory questions on experimental skills, including a graph and a plan	1 hour	40
Solutions	Answer key and an explanation for every MCQ; a full worked solution and mark scheme for every part of Papers 4 and 6; topic map; "If you lost marks on..." table; self-check bands	–	–

How to use this set

1. Sit each paper in one go, timed, with a calculator, ruler, protractor and pencil. No notes.
2. Write your answers on the paper (Paper 2: on the answer grid at the end of the paper).
3. Mark it yourself with the mark scheme: give a mark only where your answer matches a marking point. Each **BI** badge is one mark.
4. Read the worked solution for every question you dropped marks on, then use the topic map to go back to the right chapter of the notes.

Mark-scheme labels

BI independent mark

CI method mark, given when the final answer is wrong or missing (a correct final answer with its unit scores all the marks)

AI final answer with the correct unit

grey notes: allow / ignore / do not allow; ecf = error carried forward

★ **Exam tip:** Physics papers use $g = 9.8 \text{ N/kg}$. Show your working in every calculation: a correct method earns marks even when the final answer slips.

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PHYSICS**0625 · Mock Set 1****Paper 2 Multiple Choice (Extended)****45 minutes**

Name

Centre no.

Candidate no.

You will need: the answer grid at the end of this paper · soft pencil (B or HB) · soft clean eraser · calculator

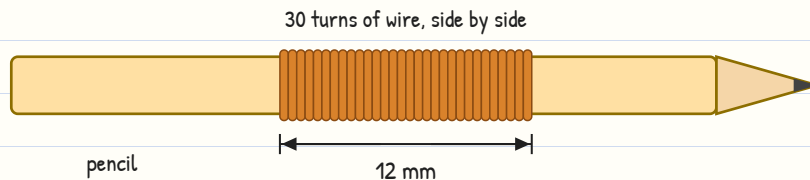
INSTRUCTIONS

- There are forty questions on this paper. Answer all questions.
- For each question there are four possible answers A, B, C and D. Choose the one you consider correct and record your choice in soft pencil on the answer grid.
- You may use a calculator.
- Take the weight of 1.0 kg to be 9.8 N (acceleration of free fall = 9.8 m/s^2).

INFORMATION

- The total mark for this paper is 40.
- Each correct answer will score one mark.
- Any rough working should be done on this question paper.

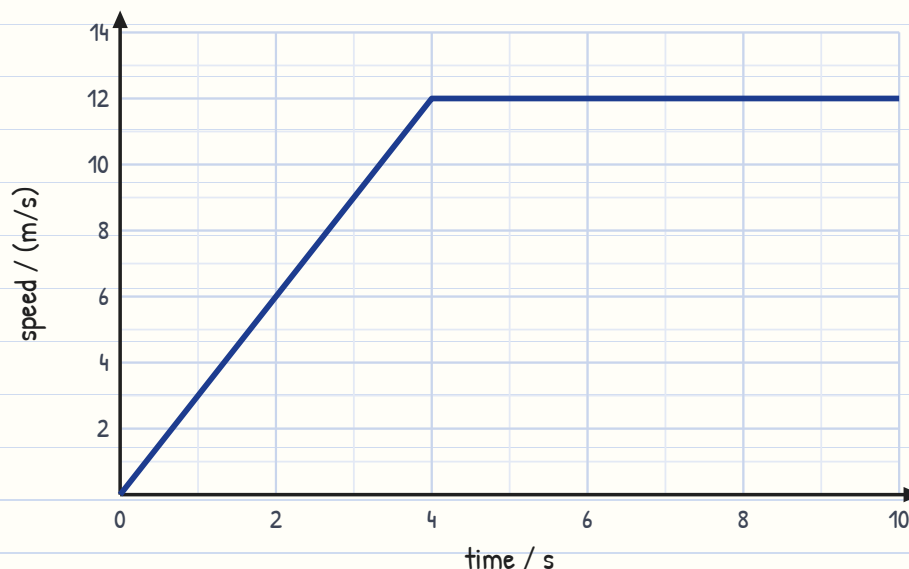
1. A student winds thin copper wire closely, side by side, around a pencil. The 30 turns cover a length of 12 mm along the pencil.



What is the diameter of the wire?

- A 0.040 mm B 0.40 mm C 2.5 mm D 12 mm

2. The speed-time graph shows the first 10 s of the motion of a cyclist.



What is the distance travelled by the cyclist in the 10 s?

- A 60 m B 72 m C 96 m D 120 m

3. A skydiver is falling vertically at her terminal velocity. She opens her parachute.

Which row describes the resultant force on the skydiver and her motion immediately after the parachute opens?

	<i>resultant force</i>	<i>motion</i>
A	upwards	she slows down
B	upwards	she moves upwards
C	downwards	she speeds up
D	zero	she falls at a constant speed

4. An object of mass 5.0 kg has a weight of 18 N on the surface of a planet.

What is the gravitational field strength at the surface of the planet?

- A 3.6 N/kg B 9.8 N/kg C 13 N/kg D 90 N/kg

5. A small metal key of mass 104 g is lowered into a measuring cylinder containing water. The water level rises from 35.0 cm³ to 48.0 cm³.

What is the density of the metal?

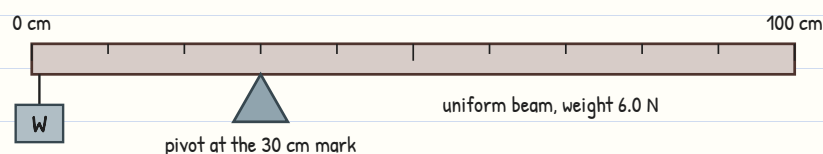
- A 0.13 g/cm³ B 2.2 g/cm³ C 3.0 g/cm³ D 8.0 g/cm³

6. A spring is 12.0 cm long when no load is attached. When a load of 2.4 N hangs from it, its length is 15.0 cm. The spring has not passed its limit of proportionality.

What is the spring constant of the spring?

- A 0.16 N/cm B 0.20 N/cm C 0.80 N/cm D 1.25 N/cm

7. A uniform beam is 100 cm long and has a weight of 6.0 N. It rests on a pivot at the 30 cm mark. A load of weight W hangs from the 0 cm end, and the beam balances horizontally.



What is the value of W ?

- A 3.6 N B 4.0 N C 6.0 N D 10 N
8. A ball of mass 0.15 kg hits a wall at 8.0 m/s. It rebounds along the same line at 6.0 m/s. What is the size of the impulse on the ball?
- A 0.30 N s B 0.90 N s C 1.2 N s D 2.1 N s
9. A car of mass 1200 kg travels at 15 m/s. What is the kinetic energy of the car?
- A 9000 J B 18 000 J C 135 000 J D 270 000 J
10. Which energy resource does **not** obtain its energy from the Sun?
- A biofuel B hydroelectric C wind D geothermal
11. A diver swims down from a depth of 4.0 m to a depth of 14.0 m in sea water. The density of the sea water is 1030 kg/m³. By how much does the pressure on the diver increase?
- A 1.0×10^4 Pa B 4.0×10^4 Pa C 1.0×10^5 Pa D 1.4×10^5 Pa
12. A fixed mass of gas has a volume of 120 cm³ at a pressure of 1.0×10^5 Pa. The gas is compressed slowly to a volume of 40 cm³. Its temperature does not change. What is the new pressure of the gas?
- A 3.3×10^4 Pa B 1.0×10^5 Pa C 3.0×10^5 Pa D 9.0×10^5 Pa
13. Smoke particles in air are viewed through a microscope. The particles move about in a random, jerky way. What causes this motion?
- A collisions with fast-moving air molecules, which are much smaller than the smoke particles
B convection currents in the air around the smoke particles
C the smoke particles are hot, so they vibrate about fixed positions
D collisions with air molecules, which are much larger than the smoke particles
14. A liquid of mass 0.50 kg is heated from 20 °C to 40 °C. The energy supplied to the liquid is 21 000 J. What is the specific heat capacity of the liquid?
- A 525 J/(kg °C) B 1050 J/(kg °C) C 2100 J/(kg °C) D 4200 J/(kg °C)

15. Some water is left in a shallow dish in a room. The water evaporates and the water remaining in the dish becomes cooler.

Why does the remaining water become cooler?

- A The air above the dish is colder than the water.
- B Water molecules lose energy when they hit the sides of the dish.
- C The less energetic molecules escape, leaving the more energetic molecules behind.
- D The more energetic molecules escape, so the average kinetic energy of the remaining molecules decreases.

16. Two identical metal cans are filled with equal masses of water at 80°C and left in a cool room. One can is painted dull black. The other can is shiny silver.

Which row is correct?

	<i>can that cools faster</i>	<i>reason</i>
A	dull black	it is a better emitter of infrared radiation
B	dull black	it is a better conductor of thermal energy
C	shiny silver	it reflects infrared radiation away from its surface
D	shiny silver	it is a better emitter of infrared radiation

17. The cooling unit of a refrigerator is placed near the top of the cabinet.

Why is the cooling unit placed there?

- A Cold air is less dense than warm air, so it rises to the top.
- B Air cooled by the unit becomes denser and sinks, setting up a convection current.
- C Cold air is a good thermal conductor, so it carries the cold downwards.
- D Thermal energy always moves downwards, towards the cooling unit.

18. Water waves on a pond have a frequency of 2.5 Hz . The distance from the first crest to the fifth crest is 1.6 m .

What is the speed of the waves?

- A 0.64 m/s B 0.80 m/s C 1.0 m/s D 4.0 m/s

19. Straight water waves pass through a gap in a barrier.

Which wavelength and gap width give the greatest diffraction (spreading) of the waves?

	<i>wavelength / cm</i>	<i>gap width / cm</i>
A	1.0	4.0
B	2.0	5.0
C	1.0	2.0
D	2.0	2.0

20. A girl stands 1.5 m in front of a vertical plane mirror. She walks 0.50 m towards the mirror.

What is the distance between the girl and her image now?

- A 1.0 m B 2.0 m C 2.5 m D 3.0 m

21. A type of glass has a refractive index of 1.60.

What is the critical angle for light in this glass?

- A 32° B 39° C 51° D 58°

22. An object is placed between a thin converging lens and its principal focus.

Which row describes the image formed?

	<i>real or virtual</i>	<i>upright or inverted</i>	<i>size compared with the object</i>
A	virtual	upright	enlarged
B	virtual	inverted	diminished
C	real	inverted	enlarged
D	real	upright	same size

23. Which list of electromagnetic waves is in order of increasing frequency?

- A infrared $\rightarrow$ microwaves $\rightarrow$ visible light $\rightarrow$ X-rays
 B microwaves $\rightarrow$ ultraviolet $\rightarrow$ visible light $\rightarrow$ gamma rays
 C radio waves $\rightarrow$ infrared $\rightarrow$ ultraviolet $\rightarrow$ gamma rays
 D visible light $\rightarrow$ infrared $\rightarrow$ ultraviolet $\rightarrow$ X-rays

24. A student stands in front of a tall cliff and claps her hands once. She hears the echo 0.80 s later. The speed of sound in air is 340 m/s.

How far is the student from the cliff?

- A 136 m B 213 m C 272 m D 425 m

25. Which row gives the best material for the core of an electromagnet, and the reason?

	<i>material</i>	<i>reason</i>
A	steel	it keeps its magnetism when the current is switched off
B	copper	it is a good electrical conductor
C	aluminium	it is light and does not rust
D	soft iron	it is easily magnetised and easily loses its magnetism

26. A charge of 360 C passes a point in a circuit in 2.0 minutes.

What is the current?

- A 0.33 A B 3.0 A C 180 A D 720 A

27. Wire P has a resistance of $8.0\ \Omega$. Wire Q is made of the same metal. Q is twice as long as P and has twice the diameter of P.

What is the resistance of Q?

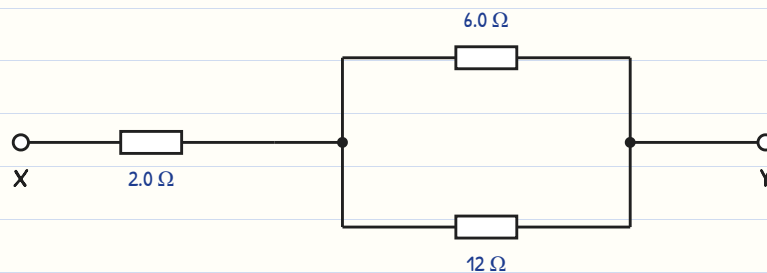
- A $2.0\ \Omega$ B $4.0\ \Omega$ C $8.0\ \Omega$ D $16\ \Omega$

28. A 2.0 kW heater is switched on for 90 minutes. Electrical energy costs 15 cents per kW h.

What is the cost of the energy used?

- A 22.5 cents B 30 cents C 45 cents D 2700 cents

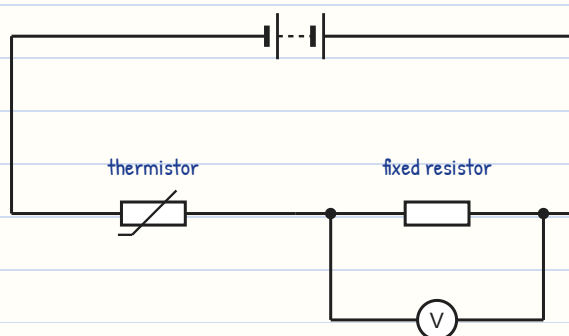
29. Three resistors are connected between terminals X and Y.



What is the combined resistance between X and Y?

- A $1.3\ \Omega$ B $6.0\ \Omega$ C $11\ \Omega$ D $20\ \Omega$

30. A thermistor and a fixed resistor are connected in series to a battery. A voltmeter is connected across the fixed resistor.



The temperature of the thermistor increases.

Which row is correct?

	<i>resistance of thermistor</i>	<i>reading on voltmeter</i>
A	decreases	increases
B	decreases	decreases
C	increases	increases
D	increases	decreases

31. A hair dryer is rated at 1.1 kW, 230 V. Fuses of rating 3 A, 5 A, 13 A and 30 A are available.

Which fuse should be fitted in the plug of the hair dryer?

- A 3 A B 5 A C 13 A D 30 A

32. A bar magnet is pushed into a coil of wire. The coil is connected to a sensitive centre-zero ammeter, which shows that an e.m.f. is induced.

Which change does **not** increase the size of the induced e.m.f.?

- A using a coil with more turns
 B pushing the magnet in faster
 C pushing the magnet in, at the same speed, with its other pole first
 D using a stronger magnet

33. An ideal (100% efficient) transformer has an input voltage of 240 V and an output voltage of 12 V. The current in the secondary coil is 2.0 A.

What is the current in the primary coil?

- A 0.10 A B 2.0 A C 20 A D 40 A

34. A neutral atom of iron is represented by ${}^{59}_{26}\text{Fe}$.

Which row gives the numbers of particles in this atom?

	protons	neutrons	electrons
A	26	33	26
B	26	59	26
C	33	26	33
D	26	33	33

35. The nuclide strontium-90, ${}^{90}_{38}\text{Sr}$, decays by emitting a β -particle.

Which nuclide is formed?

- A ${}^{86}_{36}\text{Kr}$ B ${}^{90}_{37}\text{Rb}$ C ${}^{89}_{38}\text{Sr}$ D ${}^{90}_{39}\text{Y}$

36. The count rate measured near a radioactive sample is 520 counts/minute. The background count rate is 40 counts/minute. The half-life of the sample is 3.0 hours.

What count rate is measured near the sample 9.0 hours later?

- A 25 counts/min B 60 counts/min C 65 counts/min D 100 counts/min

37. Which row describes β -particles?

	charge	stopped by
A	negative	a few millimetres of aluminium
B	positive	a sheet of paper
C	negative	a sheet of paper
D	no charge	several centimetres of lead (greatly reduced)

38. A satellite moves in a circular orbit of radius 4.2×10^7 m around the Earth. One orbit takes 24 hours.

What is the average orbital speed of the satellite?

- A 0.49 km/s B 3.1 km/s C 180 km/s D 11 000 km/s

39. What happens to a red supergiant star at the end of its life?

- A It forms a planetary nebula with a white dwarf at its centre.
 B It contracts and becomes a protostar again.
 C It becomes a stable star again once all its hydrogen is used up.
 D It explodes as a supernova, leaving a neutron star or a black hole.

40. The light from a distant galaxy shows that it is moving away from the Earth at 1.1×10^7 m/s. The Hubble constant is 2.2×10^{-18} per second.

What is the distance of the galaxy from the Earth?

- A 2.4×10^{-11} m B 4.5×10^{17} m C 5.0×10^{21} m D 5.0×10^{24} m

END OF PAPER 2**Paper 2 answer grid**

Shade or circle one letter for each question. Then mark it with the key in the solutions section.

1 (A) (B) (C) (D)

11 (A) (B) (C) (D)

21 (A) (B) (C) (D)

31 (A) (B) (C) (D)

2 (A) (B) (C) (D)

12 (A) (B) (C) (D)

22 (A) (B) (C) (D)

32 (A) (B) (C) (D)

3 (A) (B) (C) (D)

13 (A) (B) (C) (D)

23 (A) (B) (C) (D)

33 (A) (B) (C) (D)

4 (A) (B) (C) (D)

14 (A) (B) (C) (D)

24 (A) (B) (C) (D)

34 (A) (B) (C) (D)

5 (A) (B) (C) (D)

15 (A) (B) (C) (D)

25 (A) (B) (C) (D)

35 (A) (B) (C) (D)

6 (A) (B) (C) (D)

16 (A) (B) (C) (D)

26 (A) (B) (C) (D)

36 (A) (B) (C) (D)

7 (A) (B) (C) (D)

17 (A) (B) (C) (D)

27 (A) (B) (C) (D)

37 (A) (B) (C) (D)

8 (A) (B) (C) (D)

18 (A) (B) (C) (D)

28 (A) (B) (C) (D)

38 (A) (B) (C) (D)

9 (A) (B) (C) (D)

19 (A) (B) (C) (D)

29 (A) (B) (C) (D)

39 (A) (B) (C) (D)

10 (A) (B) (C) (D)

20 (A) (B) (C) (D)

30 (A) (B) (C) (D)

40 (A) (B) (C) (D)

Score: / 40

Worked solutions and mark schemes

Mark your papers first, then read the explanations. Totals: Paper 2 = 40, Paper 4 = 80, Paper 6 = 40.

Paper 2 Multiple Choice: answer key

1 B	2 C	3 A	4 A	5 D	6 C	7 B	8 D	9 C	10 D
11 C	12 C	13 A	14 C	15 D	16 A	17 B	18 C	19 D	20 B
21 B	22 A	23 C	24 A	25 D	26 B	27 B	28 C	29 B	30 A
31 B	32 C	33 A	34 A	35 D	36 D	37 A	38 B	39 D	40 D

Key balance: A 10 · B 10 · C 10 · D 10. One mark for each correct answer.

Paper 2: worked solutions

1 **B**

30 diameters fill 12 mm, so one diameter = $12 \text{ mm} \div 30 = 0.40 \text{ mm}$. Measuring many turns and dividing reduces the error in measuring a very small length. A (0.040 mm) comes from working in cm ($1.2 \text{ cm} \div 30 = 0.04 \text{ cm}$) and then writing mm; C is $30 \div 12$ the wrong way up.

2 **C**

Distance = area under the speed–time graph: triangle $\frac{1}{2} \times 4 \times 12 = 24 \text{ m}$, plus rectangle $6 \times 12 = 72 \text{ m}$, total 96 m. B is the rectangle only; D (12×10) assumes the cyclist moved at 12 m/s for the whole 10 s; A treats the whole area as one triangle.

3 **A**

At terminal velocity weight = air resistance. Opening the parachute suddenly makes air resistance much larger than the weight, so the resultant force is upwards. An upward resultant force on a body moving downwards makes it decelerate: she slows down but still moves downwards (B is the trap). She later reaches a new, lower terminal velocity.

4 **A**

$g = W/m = 18/5.0 = 3.6 \text{ N/kg}$. B is the Earth value (g depends on the planet); D multiplies instead of dividing.

5 **D**

Volume of the key = $48.0 - 35.0 = 13.0 \text{ cm}^3$, so $\rho = 104 \div 13.0 = 8.0 \text{ g/cm}^3$. B and C divide by one of the readings instead of the change in volume; A is volume $\div$ mass.

6 **C**

Extension $x = 15.0 - 12.0 = 3.0 \text{ cm}$, so $k = F/x = 2.4/3.0 = 0.80 \text{ N/cm}$. A uses the stretched length (15.0 cm) and B the original length (12.0 cm) instead of the extension; D is $x \div F$.

7 **B**

The weight of a uniform beam acts at its centre (50 cm mark), 20 cm from the pivot. Moments about the pivot: $W \times 30 = 6.0 \times 20$, so $W = 4.0 \text{ N}$. C ignores the distances; D uses 50 cm instead of 20 cm; A puts the distances the wrong way round.

8 D

Impulse = change in momentum. Take towards the wall as positive: before $+0.15 \times 8.0 = +1.2 \text{ N s}$, after $-0.15 \times 6.0 = -0.90 \text{ N s}$, change = 2.1 N s . A (0.30 N s) forgets that velocity is a vector and simply subtracts the speeds.

9 C

$E_k = \frac{1}{2}mv^2 = 0.5 \times 1200 \times 15^2 = 135\,000 \text{ J}$. D forgets the $\frac{1}{2}$; B ($18\,000$) is mv , which is the momentum, not an energy; A is $\frac{1}{2}mv$, with v not squared.

10 D

Geothermal energy comes from the hot rocks inside the Earth (mainly from radioactive decay), not from the Sun. Biofuels store energy from photosynthesis, winds are caused by the Sun heating the atmosphere unevenly, and hydroelectric energy depends on the water cycle driven by the Sun.

11 C

Use the change in depth: $\Delta p = \rho g \Delta h = 1030 \times 9.8 \times 10.0 = 1.0 \times 10^5 \text{ Pa}$. D uses the full 14.0 m depth and B the 4.0 m depth; A leaves out g .

12 C

At constant temperature $pV = \text{constant}$: $1.0 \times 10^5 \times 120 = p \times 40$, so $p = 3.0 \times 10^5 \text{ Pa}$. A makes the pressure fall when the volume falls; D squares the volume ratio.

13 A

This is Brownian motion: the visible smoke particles are hit unevenly by many tiny, fast-moving air molecules, so they jerk about randomly. D has the sizes the wrong way round: if the air molecules were larger they could be seen; it is because they are much smaller and much faster that each collision gives only a small, random push.

14 C

$c = \frac{\Delta E}{m\Delta\theta} = \frac{21\,000}{0.50 \times 20} = 2100 \text{ J/(kg } ^\circ\text{C)}$. B uses the final temperature (40°C) instead of the rise; D is the value for water, which this liquid is not.

15 D

Only the more energetic molecules at the surface have enough energy to escape. They take energy away, so the average kinetic energy of the molecules left behind falls, and the temperature falls. C is the reverse of what happens.

16 A

A dull black surface is a better emitter of infrared radiation than a shiny surface, so the black can lose energy faster. The cans are made of the same metal, so B (conduction) cannot explain the difference. A shiny surface is a poor emitter (D is wrong); C is about reflecting incoming radiation, which would not make it cool faster.

17 B

Air next to the cooling unit cools, contracts, becomes denser and sinks; warmer, less dense air rises to take its place, so a convection current circulates through the whole cabinet. A has the density change the wrong way round; "cold" is not a thing that moves (C, D).